STEVENS CANYON HIGHWAY
Mount Rainier National Park
Between Paradise and Washington Highway 123
Longmire Vicinity
Pierce County
Washington

HAER No. WA-123

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
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HISTORIC AMERICAN ENGINEERING RECORD

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Mount Rainier National Park
HAER No. WA-123

I. INTRODUCTION

Location:	Between Paradise and Washington Highway 123, Mount Rainier National Park, Lewis County, Washington. Quad: Mt. Rainier East, Wash. UTMs: East end: Junction Paradise loop road and Narada Cut-Off 10/596200/5180950 West end: Stevens Canyon Entrance 10/610325/5177700
Date of Construction:	1931-1957
Designer:	Bureau of Public Roads
Owner:	Mount Rainier National Park, National Park Service
Use:	Park highway
Significance:	The Stevens Canyon Highway was the last eegment of the Mount Rainier National Park partial circuit road eyetem to be conetructed. Although not completed until 1957, the road features a number of characteristic "rustic style" structuree and showcases some of the park's most spectacular scenery.
Project Information:	Documentation of the Stevens Canyon Highway is part of the Mount Rainier National Park Roads and Bridges Recording Project, conducted in summer 1992 by the Historic American Engineering Record. Richard H. Quin, Historian, 1992

II. HISTORY

This is one in a series of reports prepared for the Mount Rainier National Park Roads and Bridges Recording Project. HAER No. WA-35, MOUNT RAINIER NATIONAL PARK ROADS AND BRIDGES, contains an overview of the park roads.

Stevens Canyon Highway

The last of the park highways to be constructed, the Stevens Canyon Highway was the final link in the park's partial circuit road system. When it was completed in 1952, it provided the first direct connection by road between the east and west sides of the park. This not only allowed motorists to visit both parts of the park without making a circuitous journey outside the park boundaries, but it also greatly facilitated communication between Park Headquarters at Longmire (later relocated to the Ashford area) with the Sunrise and Ohanapecosh areas. Although it was not completed until the 1950s, the road was designed in the 1930s, and its structures--bridges, tunnels, viaducts and retaining walls--were generally designed in the so-called "rustic style" of architecture which is commonly used in the road structures on other park routes. A long stretch of the road was built on a bench blasted out from the cliff sides and the scars will remain visible for decades. However, after consideration of a number of alternative plans for the road locations, it became clear that the impact on the landscape could have been far worse. Certain locations along the road, such as the Box Canyon of the Cowlitz and the Reflection Lakes area, were carefully designed to take full advantage of their landscape potential, and afford visitors delightful access to these unique environments.

The first consideration for a road across the south side of the park dates to April 1904, when the Sundry Civil Appropriations Act authorized a survey from the east side of the park to Paradise, where a connection with the "Government Road" (Nisqually Road, HAER No. WA-35a), then under construction, would be made. Junior Engineer Lieutenant John Zug of the U.S. Army Corps of Engineers was placed in charge of this crew in July.[1] The survey was completed in late 1904. The party surveyed a line from the head of the American River along the Cascade Crest and over into the Ohanapecosh Valley, then up Olallie Creek over the Cowlitz Divide into Cowlitz Park. The cost of a road along this route was estimated at $104,490.[2] This route followed a line north of the present Stevens Canyon Highway. No funds were appropriated for its construction.

In 1907, Major Hiram M. Chittenden, in nominal charge of park roadbuilding activities for the Corps of Engineers, suggested the establishment of a "round-the-mountain" road system to provide for increased access and tourist use of Mount Rainier National Park. Over the ensuing years, several links of this road network were completed. The Nisqually Road [HAER No. WA-119] was finished in 1915, providing access to Paradise Valley from the park's western boundary. A short spur road [HAER No. WA-120] was built into the Carbon River area in the park's northwest corner in 1921. The National Park Service and the Bureau of Public Roads then surveyed the route for a "Westside Highway" which would connect the Nisqually Road near the park entrance with the Carbon River spur road. Construction of this road [HAER No. WA-122] began in 1926, but the road was never extended north of the North Puyallup River, which it reached in 1934. On the east side of the park, the Mather Memorial Highway [HAER No. WA-125] was completed in 1934, and the connecting East Side Road [HAER no. WA-124] in 1940. The roads were not connected, however, and no direct motor travel between the east and west sides of the park was possible until the Stevens Canyon Highway was completed in 1957.

Despite the failure to secure funds for the route surveyed by Lieutenant Zug, park administrators continued to investigate the possibility of a road from the Paradise area east across the south side of the park. A location survey was run in 1916 under the supervision of Engineer J. G. Morgan for a new road beginning on the existing government road at Inspiration Point, then passing *via* Reflection Lakes, Stevens Canyon, the south end of the Cowlitz Divide, and

the Ohanapecosh and Chinook rivers to connect with the new McClellan Pass Highway [now the Mather Memorial Parkway] at Cayuse Pass. Total length of ths proposed road would be 26 miles, and the maximum grade would be 6 percent.[3] Ths survey costs were funded by $1,000 from the park's annual appropriation, $1,000 from Pierce County, and $500 each from Yakima and Lewis counties. The fisld work began around 15 August and was completed in mid-October. A rough cost of $12,500 a mile was estimated for the construction of the road.[4] Park Supervisor Dewitt L. Rsaburn suggested that completion of the road would open up the park to the Yakima Valley and eastern Washington, and would allow motorists to make a complete circuit of the mountain.[5] Again, no funds were appropriated for construction, and it would be another decade before serious consideration was given to a south side road.

In 1925, Mount Rainier National Park developed a major five-year road development program, part of which included studies for a road across the south side of the park. In July of the same year, the National Park Service signed a Memorandum of Agreement with the Bureau of Public Roads (BPR), an agency of the U.S. Department of Agriculture, under which the Bureau assumed responsibility for major road projects in all the national parks. The BPR was soon directed to begin investigations for the new "South Side Highway," and the Stevens Canyon was suggested as the most likely route.

National Park Service landscape architect Ernest A. Davidson and BPR engineer C. R. Short made a reconnaissance survey of a road route down Stevens Canyon in October 1926.[6] Their proposed route would drop from the Nisqually Road near Inspiration Point to Reflection Lakes, then down Stevens Canyon to ths Muddy Fork of the Cowlitz River, and then up the river to Ohanapecosh Park before heading northeast to cross the Cascade crest at Cayuse Pass.[7]

On 11 August 1928, the National Park Service requested the Bureau of Public Roads to investigate a new route from Paradise Valley to Cayuse Pass. The road was to be built to the minimum 18' wide 1927 standard with a maximum grade of 6 percsnt. Two junctions with the Nisqually Road were considered. The first at Inspiration Point, the other from a point one mile further up the Valley. Both routes met at Reflection Lakes. From there, the combined route dropped down Stevens Canyon to the Muddy Fork of the Cowlitz River. Here, three choices were available. The first, heading up the Muddy Fork, was the same as that described in Engineer Short's 1927 report. A lower route droppsd farther down Stevens Canyon to Nickel Creek, then headed up Nickel Creek on a series of switchbacks. The third followed the west side of Nickel Creek to a crossing at St. Johns Fall. All three routes would then ascend the Cowlitz Ridge to the Indian Bar country where the Ohanapecosh River would be crossed. The road would then drop to Boulder Creek, then along a ridge south of Double Peak and down to Needle and Boundary creeks, and then up easterly to cross at Cayuss Pass. BPR engineer J. B. Reher estimated the cost of the cheapsst alternativs as $3,321,935.[8]

On 10 Septsmber 1929, the Bureau of Public Roads was instructed to investigate a route traversing the higher regions between Reflection Lakes and the Muddy Fork of ths Cowlitz, providing for a closer approach to the scenery at the immediate base of the mountain. The new line, surveyed by Robert N. Kellogg of the BPR, left from Inspiration Point and followed for the first 1.2 miles the same line described in the Reher survey. The new line then swung north of Louise Lake and followed the south and west slopes of Mazama Ridge, crossed Stevens Creek near the head of its canyon at elevation 4,780', and then rose along the south edge of Stevens Creek Canyon around a ridge to drop to Williwaukas Creek. It then dropped around the point of Fan Ridge to Fan Cresk Gorge, then over to the Muddy Fork at elevation 3,700'. It then climbed on a 5 and 6 percent grade another 1.1 miles to the upper end of the West Fork

Nickel Creek Meadows, where it joined the Reher survey route. Kellogg reported that this route would be very expensive, requiring five major bridges from 200' to 300' long over a series of canyons up to 200' deep. Several short tunnels might be required, and Kellogg warned that heavy snowpack and serious slides could be expected. He estimated the cost of the construction for the surveyed section alone at $1,585,970.[9]

Kellogg was then asked the resurvey the 8 miles of road from the Stevens Creek crossing to Nickel Creek along a lower line farther down the canyon. He reported that this line would still require the same number of bridges. Tunnels could be employed to straighten out the line, and would eliminate some of the smaller bridges. This section of the lower route would roughly cost $1,204,479 as opposed to $1,27D,D6D for the same section on his original survey.[10]

Kellogg produced a final survey report in 1930. In it, he recapitulated the earlier survey lines as far as the Muddy Fork of the Cowlitz. From Muddy Fork, however, he suggested a line swinging southeast around Backbone Ridge, which would take the road for a distance of about a mile outside what was then the park boundary. (As an alternative, the road could cross the Cowlitz Divide and then drop down the Olallie Creek valley to the Ohanapecosh River. As this would require extensive curvature and side-hill work on poor terrain, and result in little savings of distance, Kellogg discouraged its adoption.) Another alternative route followed the existing line as far as Nickel Creek, where it then swung *south* along the Cowlitz Divide to meet the other route at the park boundary near Backbone Ridge. From there, the combined route would swing around the Cowlitz Divide and drop to the Ohanapecosh River watershed, crossing the river just north of Cougar Creek and then heading upstream across Deer and Dewey creeks to Cayuse Pass. Kellogg favored the already surveyed "upper line" or Stevens Ridge route between Louise Lake and the Muddy Fork, suggesting that it would be less expensive to construct and would provide better scenic views. He also proposed a "scenic spur road" to the high country of Cowlitz Park. He estimated the cost of a highway along these lines (including the spur road) at $3,39B,DDD.[11] By comparison, a road following Stevens Ridge and crossing the high country at Ohanapecosh Park could cost as much as $4,289,000, although it was a shorter and more direct route and offered far better views of the mountain. Despite providing better views, the road would require considerable landscape scars; Kellogg's superior, BPR Senior Highway Engineer J.A. Elliott, warned that such a route would "practically destroy the area which [the] road is to open up." But since scenery was the chief consideration for park motorists, Elliott favored the Stevens Ridge-Ohanapecosh Park route, despite the extra cost.[12]

Following a period of study of the various alternatives, the "low line" route down Stevens Canyon was adopted in 1930. A formal location survey, staking out the route, was conducted that year from the junction at Inspiration Point to the Muddy Fork of the Cowlitz River. This was termed the "P" line route.[13]

In July 1931, National Park Service Director Horace M. Albright made a three-day inspection tour on horseback of the proposed routes. He was accompanied by Park Superintendent O. A. Tomlinson, NPS Chief Landscape Engineer Thomas C. Vint and Associate Landscape Engineer Ernest A. Davidson, NPS Chief Engineer Frank A. Kittredge, Dr. Laurence I. Hewes, Deputy Engineer of the Bureau of Public Roads and BPR Assistant District Engineer J. A. Elliott, Dr. E. I. Meinecke of the Bureau of Plant Industry and General Manager Paul Sceva of the Rainier National Park Company. Albright rejected the route from the Cowlitz Divide via Indian Bar, Double Peak and Chinook Creek to Cayuse Pass as too expensive and destructive of the park landscape. He directed attention to the

route down Stevens Creek Canyon and up the Ohanapecosh River to Cayuse Pass, and ordered a new survey.[14]

New location surveys were begun by the Bureau of Public Roads in August. Two lines were run between Reflection Lakes and the Muddy Fork of the Cowlitz River. One ascended Stevens Ridge and dropped into Muddy Fork Canyon near the Cowlitz Glacier. The second line followed Stevens Canyon. Additional reconnaissance work wae conducted in September for the section between Cowlitz Ridge and the Ohanapecosh River and Chinook Creek canyons.[15] In 1933, a 6-mile "L" line survey was run from the junction with the State of Washington's East Side Highway (then nearing construction) to Backbone Ridge. The next year, the survey team ran the line from Stevens Creek crossing to the Muddy Fork Cowlitz River's spectacular crossing at Box Canyon, then ran the survey line between Box Canyon and Backbone Ridge.[16]

The pending completion of the White River Road to Yakima Park and the new state highway from the east prompted Park Superintendent Owen A. Tomlinson to urge the speedy completion of the new connecting road so as to facilitate administrative needs. As it was, there was no direct means to reach the east side through the park, forcing park service and patrol vehicles to make long and circuitous trips between Longmire and the eastern sections. The distance from Longmire to Sunrise was 135 miles. Tomlinson warned that even if construction was pressed with all possible speed, it would take six or seven years to complete the route, by which time visitation should reach the 600,000 level. In his 1931 annual report, he stated "the completion of this highway is now a very serious need and its construction should be given priority over other projects."[17]

As if in response to Tomlinson's plea, construction began on the west end of the road in late summer 1931, even before the east end survey had been completed. The fiscal year 1931 appropriation authorized $200,000 for construction. Bids were let on 10 July for the construction of the 1.2 mile segment (Section 4-A) between the Nisqually Road at Inspiration Point and a point between Reflection Lakes and Louise Lake. On recommendation of the BPR's District Engineer, the contract was awarded to the firm of Holmberg & Norman, Inc., on the basis of its low bid of $155,665. The contractor began work on 25 July, even before the award was formally executed by the Secretary of the Interior on 29 July.[18]

This contract included construction of a wye junction with the Paradise Road at Inspiration Point. From here to Reflection Lakes, the same general elevation of from 4,800' to 4,900' was followed, but a number of extensive rock cuts were required. The road was protected from a crumbly talus slope on the north side of Inspiration Point by a series of stone breast walls. Most of the remaining distance to Reflection Lakes utilized embankments with stone retaining walls on the lower edge. The bucking and felling work was completed in the 1931 season; the grubbing work was carried out simultaneously. All debris was burned by the end of the 1932 season. The heavy excavation work began in August 1932. Oue to breakdowns attributed to worn-out used equipment and to the severe winter season, the rough grading was not completed until September 1933. The masonry work, primarily involving the construction of long stretches of retaining wall, was finished the same month. The project also included the installation of 22 concrete pipe culverts and the construction of two reinforced concrete box culverts. As a final touch, 36" diameter unpeeled fir logs, cut in the park near the Nisqually entrance, were laid in trenches as curbs for the two parking areas at Reflection Lakes A smaller concrete curb was also laid here to separate the lots from the main roadway. [These features have been replaced by masonry guard walls.] Fine grading began in September and the project was finished on 10 October 1933.

This represented an over-run of seven days, for which Holmberg & Norman was fined $175.[19]

Construction of the next segment (Section NR-4-B) began in 1934 under another $200,000 appropriation. This 3.117-mile stretch, extending the road terminus to the Stevens Creek crossing, was originally planned to drop the road into Stevens Creek Canyon by means of three switchbacks. To reduce the winding alignment, the BPR conducted another limited survey in 1931 and developed a new line by which the road made only one single switchback. Revised plans were worked up over the winter of 1931-1932. The BPR planned a 24' roadway with widened curves and a 5' minimum ditch section. The maximum grade was to be 6 percent except on sharp curves. The engineers conceded that the segment could not be considered of high standards because of the topographical irregularities which necessitated a number of very sharp curves and a sixty-degree loop.[20] The contract for this section was let 10 November 1933 to the Colonial Building Company of Spokane, Washington, which submitted the low bid of $174,196.40. Despite the lateness of the season, the contractor decided to initiate clearing work that year with a crew of fifteen men, and was able to work until shut down by winter weather on 1 December. The work resumed on 8 June 1934 and proceeded quickly. A pioneer road was first pushed across the steep sidehill terrain, followed by construction of a tote road to allow access to the lower part of the segment and also to the next stretch of road, for which Colonial Building Company also had the contract. Working two and three shifts a day, the road was entirely roughed out except for one cut by the time an early winter shut down operations on 21 October. By this point, crews had begun constructing masonry retaining and guard walls along the switchback section. The work was not resumed until 16 July 1935, as the contractor concentrated on his lower project which was freed of snow relatively early. The final cut was then excavated, two box culverts were constructed, and the finishing work was completed on 19 October.[21]

As noted, the Colonial Building Company also received the contract for clearing and grading the next link of the road, Section NR-4-C1. The funds were made available by a special $100,000 appropriation in the Fiscal Year 1934 budget, and the company was given the work on 23 November 1933 on the basis of its low bid of $91,533.60. Construction of the aforementioned tote road provided access to the site, and work began in the late spring of 1934. This segment was only 0.9441 miles in length but lay almost entirely along the steep and rugged east slope of Stevens Creek Canyon. Work began with the construction of a temporary detour bridge across Stevens Creek. Clearing work then commenced and all but 700' was completed by the time the October snows forced a suspension of the work. Work resumed on 24 June 1935. Much of this phase of the contract required blasting and heavy excavation, which had to be done with considerable care as the debris was to be retrieved and used on fill sections. The roadbed finishing, sloping, slope rounding and clean-up work began in July and the masonry work began in August. This consisted of the construction of retaining walls, culvert head walls, and stone guard rails. All work was completed on 27 September 1935 and the project was accepted.[22]

By this point, construction had begun on the east end of the road. A contract was awarded on 24 November 1933 to Sam Orino of Spokane, Washington for the first segment (Section NR-4-E1). In March 1934, grading began on the 2.317 mile section between the junction with the East Side Road (then under construction) and Backbone Ridge. This rugged section climbed the ridge on a series of five looping switchbacks. This phase of the work was completed in September 1935.[23]

On 7 November 1934, the contract for clearing the adjacent 2.64-mile Section PEC-4-C2 was awarded to Erickson, Johnson & Smith Brothers of Naches,

Washington, who bid $3,216 on the job. This section, along the side of Stevens Ridge extending southeast nearly to the Cowlitz canyon, involved difficult sidehill work. As the terrain was too steep even for a horse trail, the contractor was forced to carry in all supplies by pack train. The contractor's camp was established in the valley on Stevens Creek, forcing workers to make a nearly vertical climb of about 500' over hazardous rock slides just to reach the scene of operations. Actual clearing work began on 5 July 1935. Most of the work consisted of slashing the fairly small growth with axes or brush hooks, although some thick snags left from a forest fire which had swept the upper Stevens Creek Canyon some fifty or sixty years earlier were cut with felling saws. The slashed materials were then piled and burned in the fall. The contractors finished their work on 26 October.[24]

Grading work on the 3.22-mile Section PEC-4-E2 began in May 1935. This section, divided into two units, would carry the road to a point outside what was then the park's south boundary to the toe of Backbone Ridge. The contractor for the 1.63-mile Unit 1, A. C. Greenwood, began work in October 1935. This was a particularly tough contract, as the section was located on steep, unstable slopes. Any blasting would cause the rock to drop down the slopes, so the contractor was forced to fell trees to form a grid to catch the rocks before blasting. The section also involved the construction of two temporary wooden trestles and masonry retaining and guard walls. Roadside cleanup included removal of snags, flattening of slopes, and painting of tree scars with black paint. The contract was completed on 25 November 1936.[25] Work on Unit 2 was done by contractor Lucich & Company of Seattle. This 1.32-mile section would carry the road to the south end of Backbone Ridge. The company completed its work in August 1938.[26]

Project NR-4-C2, a 1.202-mile section extending southeast from the Stevens Creek crossing, involved grading work and construction of the upper tunnel. The contract was let to Elliott and Company of Seattle. The contractor occupied the old Greenwood camp in summer 1936 and began operations. As with the Greenwood contract, great care had to be taken to prevent rockslides from blasting and grading work. Two more temporary trestles were also required, as was the boring of a 210' tunnel, which was to be lined temporarily with timber reinforcing. One worker on the project was killed in 1936 in a truck accident.[27]

The Bureau of Public Roads began preparing plans in order to request right-of-way permits to extend a portion of the road through the adjacent Columbia National Forest in November 1935. This section would carry the road around the southern toe of Backbone Ridge. The plans for the extension were forwarded to Forest Service officials in December.[28]

The right-of-way was summarily approved, and on 13 November 1936, bids were opened for the clearing and grading contract for Section 4-E2, Unit 2, the 1.325-mile segment of the road on the immediate east side of Backbone Ridge. The contract was awarded to Lucich and Company on the basis of its bid of $136,941.35. Due to the lateness of the season, the contractor was not ordered to begin operations until 12 May 1937. The project involved clearing, grubbing, excavation and overhaul, and finishing work. Most of the work, with the exception of finishing and masonry guard walls, was completed before winter weather forced a shutdown in November. Project work was resumed the following June and the contract was completed on 22 August 1938.[29]

The next segment of the road, Section 4-D, was divided into two segments. The Sam Orino Company began grading work on the 0.692 mile Unit 1 in 1938, and completed the work in October 1939.[30] The grading contract for the 2.348-mile Section 4-D, Unit 2, was awarded to the Lucich Company on 5 December 1939,

based on the company's bid of $124,844.40. This section, located about a mile and a half northwest of the southern tip of Backbone Ridge, involved considerable blasting of rock and other heavy excavation work. Excavated materials were used to cover embankment slopes on other parts of the route. Change orders modified the original contract to provide for construction of an approach road for the later construction of the Nickel Creek Bridge and special landscaps work, consisting of planting trees, shrubs and bushes on berms and along low embankments. Lucich began its work on 15 April 1940 and completed operations on 8 August 1941.[31]

On 6 December 1939, bids for construction of the Stevens Creek Bridge [HAER No. WA-58], the first of three major bridges on the upper part of the road, were opened by the Portland, Oregon office of the Public Roads Administration (temporary successor to the Bureau of Public Roads). Contractor Sam Orino, who had just completed his clearing contract on Project 4-D, was awarded the work, and began operations in May 1940. The bridge, a reinforced concrete rigid frame, tee beam design structure with a 78' clear span arch, was completed in July 1941 at a cost of $68,095.96.[32]

Anothsr contract was executed on 4 December 1940, providing for reconstruction grading on Sections 4-D, Unit 2, and 4-E2, Unit 1, and grading for Section 4-D, Unit 3. The contractor was E. L. Cates of Trail, Oregon, who had submitted the low bid of $133,727.80. Work began on 1 April 1941 and was completed on 30 October of the same year. The reconstruction project was ordered to eliminate a previously planned reinforced concrete culvert.[33]

The Public Roads Administration Western Regional Office in San Francisco produced construction drawings and specifications for the Muddy Fork Cowlitz River and Nickel Creek bridges, two viaducts, and several reinforced concrete culverts in the spring of 1940. Architectural plans for the principal structures were simultaneously prepared by the National Park Service Branch of Plans and Design. The Muddy Fork Bridge [HAER No. WA-60] project was awarded to Sam Orino on 16 February 1941, and a change order in November added the Nickel Creek Bridge [HAER No. WA-59] to his contract.[34]

With the completion of the Cates contract, most of the grading work on the road, a total of 22 miles, had been finished. The work consisted of, from the western end, 6.3 miles of graded 24' roadbed, 0.8 mile 26' graded roadbed, 0.3 mile partially graded roadbed, 0.5 mile unconstructed, 3.6 miles 24' graded roadbed, 0.4 mile 26' graded roadbed, and 2.3 miles graded roadbed. The half mile of uncompleted roadbed included a reinforced concrete bridge over the Muddy Fork of the Cowlitz, the lower tunnel and three reinforced concrete culverts; the Nickel Creek Bridge [HAER No. WA-59] was also incomplete.

In his 1941 annual report, the acting park superintendent predicted the road would be completed in 1943 or 1944.[35] However, the entry of the United States into World War II that December forcsd a halt to construction operations. Ths remaining contractor, Sam Orino, was forced to suspend operations on his bridge contract in August 1942 on account of the lack of steel for bridge construction. This shortage was occasioned by the wartime conditions. Orino closed his road camp and moved out his personnel.[36] On 3 September, Orino was formally ordered by the Public Roads Administration to suspend all of his operations--Project 4C2 Unit 2 Reconstruction Grading, 4C2 Unit 3 Grading, and 4D Unit 4 Grading and Tunnel--on account of shortages of manpower and materials.[37] No further work was done on the road until well after the war was concluded.

It was not until March 1947 that the park received word from the Public Roads Administration that action was being taken to prepare the remaining work on the Stevens Canyon Highway for advertisement. However, when contracts for the first phase of the new work, involving construction of the Muddy Fork Cowlitz River and Nickel Creek bridges, were advertised in May, no companies entered bids.[38]

By 1949, park officials had determined that the suspended road work had resulted in a depreciation of $1.5 million, or roughly $50,000 per year. In 1950, the first new contracts were let for the completion of the grading work. The low bidders were Hawkins and Armstrong of Seattle and J. H. and W. J. Conley of Portland, Oregon. By the end of the year, grading work was 97 percent complete. However, the two bridges still had not been contracted, guard rails had not been constructed, some slope stabilization remained, and the road had not been surfaced. Engineers from the reconstituted Bureau of Public Roads estimated that the road work would require another three years.[39]

Construction did not resume until May 1950. That month, contractor Hawkins and Armstrong moved into a camp at Nickel Creek and prepared to begin work on the Muddy Fork Cowlitz River Bridge. The Conleys began operations to clear the road from Paradise westward so that they might begin work on the tunnel at Box Canyon.[40] Hawkins and Armstrong were able to pour the concrete arch for the Muddy Fork Bridge before winter shutdown. The tunnel bore was completed by this time.[41]

The Fred H. Slate Company, Oregon, Ltd., began construction in June 1951 of two reinforced concrete viaducts in Stevens Canyon. One of these was the high curved viaduct near the upper tunnel, one of the most daring structures in the park. All work on the contract was completed in October 1952.[42]

The Muddy Fork Cowlitz River Bridge was in condition for travel on 9 August 1952, and the contractors, Hawkins and Armstrong, finished their contract work on the structure three weeks later. They turned their full attention to completion of the Nickel Creek Bridge. Both of the spans were characteristic "rustic style" stone-faced reinforced concrete structures similar to a number found elsewhere in the park. Conley and Company finished the tunnel at Box Canyon in September.[43] This tunnel was unique among the park bridges in that it was left unlined (mainly due to the excellent nature of rock) and was not provided with a cut stone portal; such a treatment resulted in a more rustic structure.

The public was now urging the speedy completion of the road. The "Roads to Paradise Mount Rainier Resort Association" in March 1953 passed a resolution calling for the road to be completed as soon as possible. This measure was endorsed by the Washington State Resort Association.[44]

The Bureau of Public Roads in August 1954 reported that four bids had been received for the 1955 construction of Project 4-A,B,C,D,E, slope stabilization, tunnel lining and surfacing. The low bidder was J. A. Terteling & Sons, Inc., at $554,406.35.[45] In October, the contract for Project 4C2, 4E1, Viaducts and Bridges, was awarded. This work involved the construction of temporary bridges over Falls Creek and the Ohanapecosh River.[46]

Terteling's crews began work immediately and good progress was soon reported, though progress through the hard rock was slow. The Osberg Construction Company did not finish all its work in the 1954 season, but did finish work with its heavy equipment in order that it might be removed. The tunnel lining work was subcontracted in June 1955 to Young and Smith, and the rock crushing

to the Bryant Construction Company. In September 1955, the viaducts were completed and work was well underway on the bridges over Falls Creek and the Ohanapecosh River. Application of crushed rock surfacing was 30 percent complete.[47]

Contracts for the construction of bridges over Falls Creek and the Ohanapecosh River were issued in July 1955 to the Wayne Construction Company of Seattle. The company had submitted the low bid of $98,961 for both bridges. The project included erection of two temporary bridges, construction of adjacent sections of wall and guardrail, and slope stabilization where required.[48] The two new bridges were plain reinforced concrete and steel girder bridges, with no overt decoration or detailing characteristic of the other rustic bridges.

With all the structures finally complete, the entire roadbed was covered with crushed gravel and then paved with bituminous asphalt. Total cost of the road reconstruction grading and paving (1950-1957) was $1,101,000.[49] The Stevens Canyon Highway was finally opened to public travel on 4 September 1957. A ribbon-cutting ceremony to mark the occasion was held at Box Canyon.[50]

Storm damage due to heavy rains on 21-22 November 1959 caused large parts of the Stevens Canyon Highway to wash into the valleys below.[51] More floods in November 1962 also washed out sections of the road.[52] Over the ensuing years, the road has been closed periodically for repairs occasioned by rockslides or storm damage.

A new entrance station near the junction with Highway 123 was completed in 1964.[53] A contract was let in 1965 for improved ditches and drains. This work cost $490,000. The road was resurfaced with bituminous asphalt between 1966 and 1968. The contractor was the Cascade Asphalt Paving Company, which performed the work at a cost of $702,000.[54]

The world-record snowfall of the winter of 1972 (1,122 inches at Paradise) caused damage throughout the park. The Stevens Canyon Highway was damaged in many places. The rock wall at Backbone Ridge washed out and walls below the upper tunnel and at Inspiration Point were damaged. The heavy weight of the snow caused the pavement to subside at twelve places ranging from 60'-400' in length.[55]

The Stevens Canyon Highway provided for the first time a direct motor route between the east and west sides of the park. In addition to greatly facilitating park administrative functions, the road has also provided visitors with a scenic route between the major park developments at Paradise and Sunrise, as well as access to such points of interest as Reflection Lakes, Box Canyon and the Grove of the Patriarchs. Although much of the route through Stevens Canyon proper was blasted out of the cliffsides, causing atrocious scarring, any alternative route would likely have caused even more devastation to the park landscape. Through its use of rustic style structures, raised viaducts around certain cliffs, and masonry retaining walls, damage to the landscape was minimized, and today's road allows motorists to enjoy some of the park's most spectacular scenery.

Description

The last major link in the park road system was the Stevens Canyon Highway, which traverses the south side of the park between the Nisqually Road and the East Side Highway. The road begins at the Nisqually Road wye at an elevation of 4,880'. Crossing the Paradise River Second Crossing Bridge [HAER No. WA-62], a rather plain reinforced concrete and steel girder structure, the road then runs southwest a half mile to Inspiration Point (elev. 4,884'), the first

scenic attraction. A parking area bounded by high masonry retaining walls allows visitors to take in a fine view of Narada Falls and the lower Paradise River valley. Traces of the old "switchbacks" which carried the old Nisqually Road prior to the construction of the Narada Cut-Off can easily be discerned. The road then meanders south and then west through a mixed conifer forest to Reflection Lakes (elev. 4854') and another turnout. The two shallow lakes are glacial depressions set in the midst of lush meadows bounded by subalpine fir and mountain hemlock, species especially well-adapted for survival through deep snow conditions. The lakes and the surrounding moist meadows cloaked with asters, spirea and water parsley, are a popular stop, and on rare windless days (and calm moonlit nights), Mount Rainier is reflected on the two lakes' surfaces.

The road then passes over a low (4867') before passing over a terrace above tranquil Louise Lake. Skirting the south and east sides of the lake, the road passes along the north base of Pinnacle Peak (6652'), one of the park's most popular climbs, and The Castle (6526'); both are part of the Tatoosh Range on the park's southern edge. Keeping to the north side of The Bench, a broad terrace, the road heads generally southeast to a point near Unicorn Creek, then makes a hairpin curve to switch back northwest and down to a crossing of Sunbeam Creek, which crosses under the road in a fine reinforced concrete box culvert. The road meanders north then curves west across the Stevens Creek Bridge and proceeds southwest down Stevens Canyon near the southern base of Stevens Ridge.

Stevens Canyon is a deep U-shaped valley carved by a long-retreated glacier, of which only the tiny Pinnacle Glacier remains. Stevens Creek's various tributary streams and branches tumble into the valley in dramatic waterfalls. The most prominent of these, Martha Falls, leaps more than 100 feet over an andesite ledge to the valley, and a small turnout allows motorists to take in the view. Sylvia Falls and Maple Falls further down the valley also attracts much attention. Much of the road route through this section passes through The Burn, a zone recovering from a late nineteenth century forest fire which devastated the old mixed conifer forest. The conifers are only slowly beginning to recover, though alders, huckleberries and other brush have established themselves more quickly. Fireweed and maples growing on talus slopes and cliff sides offer a stunning visual display in the fall as they change color.

The National Park Service and the Bureau of Public Roads considered several alternative routes for the eastern half of the highway before adopting the route down Stevens Canyon. Indeed, construction on the west end before the east end of the route was finally determined (a practice almost unheard of in road building). After NPS Director Horace M. Albright personally intervened to prohibit construction through the magnificent high country at Indian Bar and Ohanapecosh Park, engineers considered a "high-line" route along the crest of Stevens Ridge. This was rejected due to the projected great expense and also on account of the expected damage to the landscape which could be expected. Even so, the adopted "low line" route down Stevens Canyon resulted in the great scarring to the cliffsides. The scarring would have been much worse had not two short tunnels and a series of reinforced concrete viaducts been employed.

The road drops on a steady grade down Stevens Canyon, from elevation 4015' at Stevens Creek to the Box Canyon of the Cowlitz at 3,000'. As it nears the Muddy Fork of the Cowlitz, the road turns north again before running east through the Box Canyon Tunnel and across the Muddy Fork Cowlitz River Bridge. The Box Canyon of the Cowlitz is one of the most spectacular points reached by the park road system. Here, the Muddy Fork cuts through a narrow chasm 180'

below the bridge. An interpretive display, an overlook, and a trail system (linking with the Wonderland Trail circuiting Mount Rainier) featuring an overlook bridge over the canyon.

From the Box Canyon of the Cowlitz, the road runs generally east another mile to the Nickel Creek Bridge, the last of the "rustic style" bridges constructed at Mount Rainier National Park. Only a small turnout is provided at the bridge and few visitors take notice of the splendid setting or Cougar Falls just below the bridge. Back in an intact mixed conifer forest, the road continues southeast to Backbone Ridge, offering occasional fine views of Mount Rainier. More reinforced concrete viaducts carry sections of the road around the west, south and east sides of Backbone Ridge. A major parking area and overlook is located at the southwest point, and is extremely popular because it offers the first clear view of the mountain for westbound travelers.

From the Backbone Ridge viewpoint, the road swings around the ridge and then heads northeast to a connection with the East Side Highway. From the northeast spur of the ridge at 3,100' elevation, the road drops the final two miles on a series of sharp switchbacks into the Ohanapecosh River valley. Falls Creek and the Ohanapecosh River on reinforced concrete and steel girder bridges. The road terminates at the Stevens Canyon Entrance at 2,208' elevation. The last part of the road is located in an intermediate forest zone, lusher than the conifer forest above. Some of the largest trees in the park are located in the Grove of the Patriarchs near the entrance station. An interpretive trail allows visitors to view the massive Douglas firs, western hemlocks and western redcedars in the river bottom grove. Vine maples and alders are common understory plants, and ferns, devil's club, and other plants carpet the forest floor. Mushrooms are widespread in the fall.

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ADDENDUM TO
STEVENS CANYON HIGHWAY
Between Paradise and Washington Highway 123
Longmire Vicinity
Pierce County
Washington

HAER No. WA-123

Mount Rainier National Park Roads & Bridges

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